



V. *New Butterflies and a Moth from Biak.* By J. J. JOICEY, F.L.S., F.E.S., and A. NOAKES, F.E.S.

[Read February 3rd, 1915.]

# PLATES XXI—XXVIII.

THE Island of Biak is the largest of the Schouten or Misory Islands which lie outside Geelvink Bay, North New Guinea. It was first explored entomologically by Mr. W. Doherty, who visited it in 1892. He was only able to stay a short time, and in the bad season. His collection was therefore a small one, but it contained several new and distinct forms. The island was not again visited by collectors till Messrs. A. C. and F. Pratt went there during the year 1914. They were able to remain over two months and make extensive collections. The island seems peculiarly rich in specialised forms, and the species show as much affinity with those inhabiting the Moluccas and Bismarck Archipelago as with New Guinea forms.

The present paper contains thirty-one forms which we regard as new, and several of these are quite distinct; in addition, we record the other sex of four species which had not previously been known in both sexes.

We are indebted to the Lord Rothschild and Dr. K. Jordan for much kind help, and the opportunity afforded of examining specimens in the Tring Museum.

The specimens were all collected in May and June, 1914, and obtained in the southern part of the island called Bosnik.

We hope to be able to publish later a complete list of the butterflies known from this island.

## PAPILIONIDAE.

### 1. *Papilio othello obscurata*, ♀ forma nov.

(Plate XXI, fig. 1.)

Near *melia*, Roths., from Mefor. Differs from this in the much reduced red spots on the hindwing above. On the underside the discal spots are washed out and the red submarginal spots reduced,

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more lunate and typical of *aegeus* forms, whereas in *melia* they are bar-shaped. On the forewing there is only a faint light scaling beyond the cell towards the apex.

Five examples.

## 2. *Papilio euchenor comma*, subsp. nov.

♂. Forewing with the two upper apical spots larger and more rounded, the one near the margin smaller than in *euchenor*. On the hindwing near apex there is a well-defined curved bar which crosses cellule 7. This is represented below by an orange bar also present in the typical form, but it is larger than in that. The submarginal lunules are more lunate than  $\Lambda$ -shaped and are separated at the veins; the first in cellule 4 is orange like the others.

♀. Apical spots of forewing as in ♂. The patch at inner margin much smaller than in *euchenor*, the one above it reduced to a streak. On the hindwing the mark in cellule 7 is not so well defined. Hindwing below as in ♂ and all blue scaling reduced. The edge of the discal prong in cellule 6 is scaled with orange and to a less extent the lower of the two prongs in 5.

One ♂ differs from the others in having two spots outside cell at its end; these are indicated as dots in another specimen. Also, the band is deeply incised proximally on veins 2 and 3. The mark in apex of hindwing is absent, but the underside of hindwing is typical of the subspecies.

A small series of ♂♂ and 2 ♀♀ obtained.

## 3. *Papilio felixi*, sp. nov.

(Plate XXI, fig. 2.)

Nearest to *thule*, Wall., but quite distinct. ♂. *Upperside* of forewing black with greenish-white markings. A dot in cell near base, a curved streak beyond it, a larger similar streak in middle of cell, a curved streak beyond and opposite vein 4, its middle forming a triangular spot only slightly connected with a spot at each side. A short streak near lower angle of cell opposite vein 5, a round dot near upper angle of cell. Beyond cell an elongate spot at base of cellule 8 with a dot distally of it, a double spot below it in 6, 3 discal spots in 5-3 with a smaller spot opposite each near cell, similar spots in 2 joined to form a streak. A double streak in 1b and 1c, the upper the longer and joined to a round spot at the base. A submarginal row of spots as in *thule*. Hindwing with a longitudinal streak in cell obscured by dark

scaling except at end of cell where a spot is formed. Five discal streaks close to cell in 2-6, all widely separate, that in 6 the longer, those in 3 and 4 the shorter. A streak in 1c joined to the anal spot. A submarginal row of 7 spots as in *thule* but larger.

*Underside* similar to upper. On forewing the cell-folds divide the two upper streaks into three spots. The discal spots are faintly connected with spots near the cell. On hindwing a streak in cellule 7 defined at base and becoming obsolescent. Cell streak broader and better defined than above.

♀ with wings more rounded. Markings enlarged and paler, submarginal spots white.

Length of forewing: ♂ 44.5 mm., ♀ 45.5 mm.

A small series obtained.

#### PIERIDAE.

##### 4. *Elodina biaka*, sp. nov.

Allied to *umbratica*, Gr.-Sm., from the Solomons.

♂. The black margin of the forewing is more irregular on its edge than in *umbratica*. Below, the apex is washed with yellowish-white and proximally of this the black above shows through as a narrow band.

♀. Similar to ♂. The hindwing below is yellowish.

Length of forewing: ♂ 22 mm., ♀ 25 mm.

A series of both sexes.

##### 5. *Delias maudei*, sp. nov.

(Plate XXIII, figs. 3, ♂, 4, ♀.)

This fine species is intermediate between *enniana*, Obth., and *waterstradti*, Roths.

♂. *Upperside* white. Forewing with a narrow black apical and outer margin ending below the first submedian and having its inner edge deeply serrate, being invaded by triangular projections of ground-colour between the veins. An oblique patch of black scaling from vein 6-3 where it joins margin, cutting off 3 spots of ground-colour, the one in 5 being the larger. Lower discocellular scaled with black. Hindwing with a brownish-black marginal border from middle of cellule 4 to first submedian, narrowing at each end and being 4 mm. wide in cellule 2; its inner border is nebulous and greyish from band below showing through, and a spot of this colour invades the band in 3.

*Underside* of forewing with white ground-colour. Cell pale yellow at base. A curved black band on discocellular, lying mostly outside cell, narrowing along its upper part and continued within it as dark scaling to the base. This band does not join costa and space between it and costal vein is yellowish. A subapical black band, narrowing posteriorly, from costa to just below vein 2, its edges irregular. A black apex and narrow margin as above. Two yellow apical spots. Costa black, white towards base. Hindwing with basal two-thirds yellow. A brownish-black margin extending from costa above vein 7 to anal angle, its inner edge well-defined, curved to vein 4 where it is 2 mm. from cell, and thence is nearly straight to inner margin. A marginal row of 7 conspicuous yellow spots, the two at anal angle being much smaller than the others.

♀. *Upperside* smoky-brown, paler in the basal half. Forewing with apical and submarginal white spots decreasing in size posteriorly, those at the apex being elongate. Hindwing yellowish-white at costa, greyish below the cell. A marginal row of ill-defined yellowish spots.

*Underside* of forewing with basal part of cell yellow, a white inner-marginal area to beyond vein 3, and white submarginal spots as above but more distinct and larger, the two nearest apex being tinged with yellow. Costa, outer margin, and discal area with upper part of cell brownish-black. Hindwing with yellow basal half to near end of cell, distal half brownish-black. Marginal spots as in the ♂.

Length of forewing: ♂ 35.5 mm., ♀ 34 mm.

A small series obtained.

## 6. *Delias multicolor*, sp. nov.

(Plate XXIII, figs. 1, ♂, 2, ♀.)

Allied to *gabia*, Bdv. ♂. *Upperside* white. Forewing with black apical and marginal area ending in a point at vein 2 and bearing 3 white spots at the apex. These spots are joined to the margin by a streak-like prolongation of their outer edge. Costa black to the base. Hindwing with a narrow black margin, indented on intraneural folds, extending from vein 4 to first submedian. Red spots of underside show through.

*Underside*. Forewing similar to upperside, apical spots yellow, first spot much larger than above. Extreme base yellow. Hindwing with basal half yellow to end of cell. Anal area to vein 4 bright orange, fainter in 3. The costal area, part of cellule 6,



and outside end of cell is washed with orange. A black marginal band as above but twice as wide and bearing 3 large somewhat heart-shaped spots of bright orange, their apices resting on the margin. Three small marginal spots of same colour in 4-6.

♀. *Upperside* white. Forewing blackish at base. Costa, apex, and outer margin black with a well-defined inner edge. A marginal row of white spots decreasing in size from cellule 6-2, those in 4-2 being close to margin; a dot before the first spot near costa. Hindwing with basal part including cell, pale yellow. A black marginal border 3 mm. wide, from apex to first submedian, its inner edge crenulate. Three yellowish marginal dots in cellules 2-4.

*Underside* similar to ♂. Forewing with increased apical and costal black, and yellow apical spots smaller than in ♂. Basal yellow fills half the cell. Hindwing with distal area from centre of cellule 7 to inner margin, bright orange, basal half yellow. Marginal band 4 mm. wide bearing spots of bright orange as in ♂, the spots in 4-6 well developed, the last being outside the band.

Length of forewing: ♂ 29.5 mm., ♀ 26.5 mm.

A series.

#### 7. *Delias bosnikiana*, sp. nov.

(Plate XXIV, fig. 1.)

This species bears a superficial resemblance to the preceding one, but we think it belongs to the *poecilia* group.

♂. The forewing is more produced at the apex than in *multicolor*. It differs above in the much narrower black margin which only reaches just below vein 4, and in the consequent absence of apical spots. The hindwing bears some black scaling around the ends of veins 2, 3, and 4. The underside differs from *multicolor* in the increased costal and apical black, and the larger apical spots all of which are white. The inner-marginal orange area is more strongly defined and extended basally. The marginal black is broader and the spots smaller, those in 5 and 6 being absent.

♀. *Upperside* black, basal half sparsely powdered with white. Forewing with three large white apical spots prolonged basad, a faint white subcostal streak, a rounded spot in 3, a small spot in 2, and a dot in 1c. Hindwing with costa white. A submarginal row of pinkish-white spots in 2-6, somewhat heart-shaped, their apices directed to the margin.

*Underside* of forewing with basal half white, tinged with lemon-yellow in cell and outside its lower edge. Costa black to base.

Apical and submarginal spots large and better defined. Hindwing with outer half black, including apex of cell; basal half greenish-yellow, its outer edge tinged with orange at abdominal margin and a patch of orange on costa. Submarginal spots as above, bright orange, larger and more rounded than on upperside, a double spot in 1c.

Length of forewing: ♂ 30 mm., ♀ 26.5 mm.

A small series of both sexes. A figure of the ♀ will be given in a succeeding paper.

We may here note that five of the seven *Delias* now known from Biak have ♀♀ with dark upperside and prominent submarginal spots.

#### 8. *Delias dohertyi knowlei*, subsp. nov.

(Plate XXII, figs. 5, ♂, 6, ♀.)

♂. *Upperside* white with very narrow black costal and outer margin to forewing. *Underside* of forewing white. Apex lightly scaled with black, filling interspace 8 and extending outwardly to below vein 6; costa black, whitish towards base. A dark yellow spot at apex, traversed by the black veins and reaching below 6. Hindwing black. A red costal streak edged with black at margin. The margin from apex to base is sprinkled with grey-white scales forming a band 3-4 mm. broad.

♀. *Upperside* grey-black. Forewing with basal half scaled with grey-white. Hindwing with basal part including cell and inner marginal area, and extending to vein 6 between cell and margin, grey-white. *Underside* similar to ♂. Forewing with increased apical black, hindwing with a somewhat wider grey-white margin.

Length of forewing: ♂ ♀ 32 mm.

A series. *D. dohertyi*, Ob., is wrongly placed by Fruhstorfer in Seitz's "Macrol." in the genus *Huphina*.

#### 9. *Delias talboti*, sp. nov.

(Plate XXII, figs. 1, ♂, 2, ♀.)

♂. *Upperside* white. Forewing with narrow black apex and outer margin ending in a point at vein 2. *Underside* black. Forewing with basal half to near end of cell, base of 3, part of 2, most of lower median area, and inner margin white. Basal two-thirds of cell tinged with yellow. Four apical white spots and a faint spot in 3 near margin. Hindwing with costa yellow at base. A

marginal row of square-shaped grey-white spots in cellules 1c-6. Inner margin faintly scaled with grey-white anteriorly and with dark yellow at the base.

♀. Wings rounded. *Upperside* black; basal area greyish-white with some yellow scaling, rendered dark by the underlying ground-colour. Forewing with a submarginal row of 6 white spots which are larger towards apex. Hindwing with a similar row of smaller spots of nearly equal size. Inner margin grey-white.

*Underside* black. Basal three-quarters of cell to below median yellow. Submarginal spots as above but larger and better defined. A distinct spot touching margin, on first submedian fold. Hindwing with costa yellow at base and yellow scaling extending to inner margin. A submarginal row of 7 well-defined white spots much larger than those above; those in 6 and 7 tinged with yellow.

Length of forewing: ♂ 35.5 mm., ♀ 32.5 mm.

A series.

#### 10. *Delias biaka*, sp. nov.

(Plate XXII, figs. 3, ♂, 4, ♀.)

Allied to *dorimene*, Cram. ♂. *Upperside*. Forewing paler than in the allied species, costa and apex black, outer margin narrowly so to below vein 2. Apical black proximally bordered by 4 well-defined white apical spots, and a dot in 2 and 3 close to margin. Upper edge of cell streaked with grey-white. Hindwing creamy-white with a black outer marginal band which is paler distally and broader than in *dorimene*; the veins crossing it are black from their ends to a little proximal of the band. Four marginal white dots, the two first in 5 and 4 the largest. A greyish suffusion at the base.

*Underside* of forewing with basal half suffused with grey. Apical spots larger and better defined than above. Hindwing with yellow ground-colour paler than in *dorimene*. Areas 1c, 2, and 3 shaded with orange. Black marginal band as above and veins only black within it. A marginal row of 4 elongate white spots separated by the veins. The ground-colour invades the band in cellule 5.

♀. *Upperside* black, greyish at the base. Forewing with 4 white apical spots and a dot before the first. Hindwing with 4 rounded white submarginal spots in 2-5, and an indistinct one in 6.

*Underside* ground-colour black. Forewing with a submarginal row of 7 white spots from costa to outer angle, the second and third the largest, the last an indistinct dot. Basal half greyish-white. Hindwing with costa, base, and inner margin yellow. A sub-

marginal row of 7 large rounded spots, the first two the larger, pale orange, in 6 and 5, others white.

Length of forewing : ♂ ♀ 31 mm.

A series.

Since the descriptions of the sexes of this species were written, we have received a pair taken *in cop.*

# 11. *Appias albina pulverobasalis*, subsp. nov.

(Plate XXIII, figs. 5, ♂, 6, ♀.)

♂. The base of forewing and less so the base of hindwing is suffused with dark scaling above. Costa of forewing much more thickly scaled.

♀. There are five forms in the series sent. Of the typical white forms there is *principalis*, Fruh., and *semiflava*, Fruh. The yellow forms comprise *flava*, Rüb., and two which seem to be intermediate. One of these is similar to *flava* but larger and base of forewing more scaled with yellow. The other is similar but darker at base of forewing, no apical spots, and a wider marginal band on hindwing.

We figure this form. The latter and the form *semiflava* were taken *in cop.* with the ♂ form above described. A long series of both sexes, but only a few of the yellow ♀ forms.

# 12. *Appias ega falcidia*, Fruh. ♂.

(Plate XXV, figs. 1, ♂, 2, ♀.)

Seitz, "Macrol." ix, p. 156. ♀. Smith, Nov. Zool. 1, p. 337, as *saina* ♀.

Similar to *saina*, Sm., which has not yet been properly described, as Smith's "♂" is a ♀. Apex and costa narrowly margined with black, veins at apex black at ends and a certain amount of black suffusion between them. Some dark scaling along costal margin increasing at base. The black spots which occur in 3 and 4 as in *ega* are sometimes quite absent or the one in 2 is much enlarged; there is a tendency for the spot in 4 to become obsolete. Underside with apex, base of forewing and whole of hindwing sulphur yellow.

A ♀ specimen differs from the others in the absence of apical spots on forewing above, a narrower margin on hindwing, and below with apex and distal margin of hindwing brown without any yellow suffusion.

A series of both sexes.

In Seitz, "Macrol." ix, pp. 155-156, Herr Fruhstorfer has not correctly identified *Appias melania*, F., and sinks *ega*, Bdv. as a synonym. The type of *melania*, Fabr., is in the Banksian cabinet in the British Museum. It is a ♀ specimen and represents the altogether different *asteria*, Misk., so that this name must sink. The group of races which Fruhstorfer, loc. cit., treats as one species, consist probably of two; these would be represented by *paulina*, Cram., and *ega*, Bdv., respectively.

We have received a pair of this species taken *in cop*. The ♀ is much smaller than ♂ in this case.

### 13. *Appias ada solis*, subsp. nov.

(Plate XXIV, figs. 2, ♂, 3, ♀)

Near *thasis*, Fruh., but has reduced apical and marginal black above.

♂. *Upperside* of forewing with costa and outer margin to vein 3 narrowly black, the margin being proximally dentate; some dark scaling at costa near apex. Hindwing with margin black from vein 6 to first submedian, invaded by ground-colour between veins, very narrow to vein 4, widening to nearly 3 mm. on vein 3 and ending in a point.

*Underside* of forewing with upper edge of cell and costa except at base, black to near apex, limited by vein 6. Apex narrowly black and some black scaling along margin to vein 4, intervening space in 6 tinged with yellow. Hindwing bright yellow over cell and costal area. A brownish-black marginal band 7 mm. broad from 6 to anal angle, edged with orange proximally. The inner marginal area, cellules 2 and 3 proximally of the band, and an apical spot in 6, is orange.

♀. *Upperside* of forewing with base scaled with black, including two-thirds of cell. Costa and apex black, extending along margin and narrowing to vein 2, being deeply serrate between 6 and 3. Hindwing tinged with yellow. A black marginal border 4 mm. wide.

*Underside* of forewing as in ♂ but base lightly scaled with black and apical spot orange yellow. Hindwing with basal half yellow to end of cell, distal half blackish-brown. An orange spot at apex in 6 and an orange patch at inner angle.

A series of both sexes.

14. *Pareronia chinki*, sp. nov.

(Plate XXIV, figs. 4, ♂, 5, ♀.)

A very distinct species which we have pleasure in naming after the collector, who will forgive us for taking his nickname.

Nearest *jacobea*, Bdv. ♂. *Upperside* of forewing greenish-white, leaving a narrow black margin extending from base, round apex where it is 5 mm. broad, to just below vein 2 where it narrows to a point. Some greyish scaling at base of costa. Hindwing greenish-white with androconial patch extending from above vein 7 to below 6 and reaching apex. A black marginal border 3 mm. broad from apex to inner angle; white streaks at its proximal edge on intraneural folds in 1c, 2-4.

*Underside* with narrower black costal margin and two thin short streaks in apex, a streak in 6 and marginal black dentate on the veins. Hindwing brownish-black with a submarginal row of rounded white spots each traversed by a short vivid white line on the intraneural fold. In 1c two streaks broadened distally, a similar streak in 6, and another in 7 without scaling at sides of fold. Some light sparse scaling proximally of the spots from inner margin to cellule 6.

♀. *Upperside* ground-colour brownish-black with white markings. A streak through centre of cell narrowing towards base, a much thinner streak almost fused with it anteriorly, and a streak below it showing mostly as an elongate spot at end of cell. Beyond the cell a subcostal streak, a larger one below it in angle of 6, a longer one in 5, one in 4, an oblong spot in 3, an elongate spot in 2; two streaks in lower median area extending from terminal spot to base and scarcely separated by a thin line of ground-colour; below submedian a marginal streak not reaching outer angle. At apex 3 short streaks followed by a row of submarginal spots, those in 4 and 5 smaller than the others and the one in 3 the larger. Hindwing with cell white except its lower edge, and traversed by a faint streak of dark scaling. A subcostal streak and 4 elongate discal spots round cell, a thick streak in 2, two streaks in 1c divided by submedian fold, their pointed outer ends joined each to a submarginal white spot. Inner margin white along both sides of lower submedian. A submarginal row of 6 rounded white spots.

*Underside* with all white markings much increased. Cell-streaks



and inner marginal streaks confluent, and discal patches only separated from cell by the veins.

Length of forewing: ♂ 40 mm., ♀ 42 mm.

A series.

#### EUPLOEINAE.

##### 15. *Euploea tripunctata*, sp. nov.

(Plate XXVI, fig. 1, ♂; Plate XXV, fig. 3, ♀.)

♂. *Upperside* deep purplish-brown shot with blue in a side-light. A thin stripe of androconia in the lower median area of forewing. Hindwing with 3 bluish-white apical spots, the one in cellule 4 a mere dot.

*Underside* paler than above. Forewing with a blue gloss round the cell and partly invading it. Some bluish-white spots,—one at end of cell, a curved series of 5 beyond cell in 2-6, the one in 5 being a dot, a dot near costa in 10, a dot in 6 near margin. Inner margin grey. Two thin greyish though somewhat obscured stripes which converge basally in lower median area. Hindwing with a spot at end of cell, 6 round the cell in 1c-6, the first being a short streak, 3 apical white spots, a few marginal dots.

♀. *Upperside* coffee-brown, paler at the margins. Forewing shot with blue over the disc and hindwing faintly so. Hindwing with 3 white apical spots.

*Underside* paler than in ♂ and with similar markings. The marginal dots on hindwing extend from 1b-6, in pairs in each cellule except in 1b.

Length of forewing: ♂ 39 mm., ♀ 42 mm.

A series.

This species is nearest *lacon*, Sm., but has a longer sexual stripe and is much darker. It shows no variation above, but *lacon* varies in amount of blue gloss, in the spots being present or absent, and the sexual stripe may be quite wanting.

##### 16. *Euploea incerta*, sp. nov.

(Plate XXV, fig. 4.)

Allied to *obscura*, Pag. ♂. *Upperside* dark coffee-brown, forewing a little paler at apex and outer margin, hindwing with only the disc darker than the rest. The pale costal area of hindwing reaches vein 6.

*Underside* paler than upperside. Forewing with two broad

greyish stripes in lower median area, dilated basally as almost to touch. A spot at end of cell, 3 beyond it in 2-4, the one in 4 being a streak, a small spot in 3 near margin. Hindwing with a spot at end of cell, 5 spots round cell in 2-6, 3 apical spots in 4-6, an outer marginal row of dots in pairs in each cellule.

Length of forewing: 43 mm.

Nine examples.

17. *Euploea albicosta*, sp. nov.

(Plate XXVI, fig. 2.)

♂. Forewing narrow, inner margin rounded. Hindwing short and narrow. *Upperside* of forewing deep brown, paler at the apex and outer margin. Hindwing deep brown in lower part of cell, paler round the cell and merging into a pale distal area. An oval costal patch of cream-coloured scales from vein 8 to the cell, invading its upper part and filling base of cellule 6; distally of this patch some white scaling, costal edge grey.

*Underside* paler. Disc of forewing and disc and costal area of hindwing darker than the rest. On forewing a spot in cell near origin of vein 3, three spots outside cell in 2-4, a small spot in 6 near margin. Inner margin white nearly to base, and some white terminal scaling above submedian. Hindwing with a spot at end of cell, a series of 6 spots round cell in 2-7, a smaller spot in 7 near margin, 3 apical spots in 4-6, a pair of marginal dots in 5 and a pair in 6.

Length of forewing: 42 mm.

Two specimens only.

This has apparently no near ally, but belongs to the first section of *Euploea*.

NYMPHALIDAE.

18. *Cynthia arsinoe bosnikensis*, subsp. nov.

Nearest to *rebeli*, Fruh., but smaller, paler, and forewing less produced at apex.

♂. *Upperside* of forewing with reduced markings which are less defined than in *rebeli*. Discal spots smaller, the one in 4 obsolete. There is no subcostal spot in 6. Hindwing with discal line absent, the two eye-spots and submarginal spots smaller, submarginal line thinner, and marginal border very thin. *Underside* much paler than in *rebeli*, markings similar. On forewing the discal dot in 2 and the one below 2 obsolete.

♀. *Upperside* with well-defined white band and darker ground-colour than in *rebeli*. Discal spots smaller and first submarginal line is less undulate. Hindwing with white costal patch suffused by dark scaling between the two discal lines which are distinct.

*Underside* paler than in *rebeli* ♀ and without any reddish tint. Forewing with the discal dot in 5 and the one below vein 2 obsolete. Hindwing with the pale discal band much lighter, eye-spots smaller, and submarginal lines closer together.

One ♀ shows the white band darkened distally.

Length of forewing: ♂ 47 mm., ♀ 43 mm.

A series.

### 19. *Cirrochroa imperatrix*, Sm. ♀.

Nov. Zool. 1, p. 348, ♂.

Similar to the ♂, basal blue not so bright. *Underside* paler at base, discal blue line a little wider as is also the proximal blue bordering of the submarginal brown band.

Length of forewing: 40 mm.

A small series from Biak, June 1914.

### 20. *Cethosia chrysippe schoutensis*, subsp. nov.

(Plate XXVII, figs. 1, ♂, 2, ♀.)

Nearest to *lucina*, Fruh., from Jobi. Outer margin of wings less strongly undulate than in other *chrysippe* forms.

♂. *Upperside* shot with deep blue except at margins. The white subapical patch extends from subcostal 4 to vein 2, is rounded on its outer edge, and is 9 mm. broad between veins 4 and 6. A short subcostal streak before the band. The red at base of cellule 2 is more reduced than in allied forms. Submarginal white dots are only faintly indicated and this in a very few specimens. There is a tendency to develop a dot in 2 on forewing and to reduction in size of spot in 2.

*Underside* darker than in *damasippe*, Feld. The submarginal spots on hindwing larger and somewhat produced proximally. A reddish suffusion between the discal bands and distally of the outer band, the red spot at end of cell brighter.

♀ differs as in the allied forms.

A series.

21. *Symbrenthia hippoclus nigroapicalis*, subsp. nov.

(Plate XXVI, fig. 3, ♂, 4, ♀.)

♂. Forewing with the spot in 4 enlarged and narrowly joined to the spot at base of 3. No spot in apex. The submarginal spot in 4 represented by a dot. The inner marginal band is reduced to a triangular spot reaching vein 2 which separates its apex from a spot in cellule 2 placed distally of it.

♀. On the forewing resembling the ♀ of *hylaesus*, Wall. There is a short black streak in the band between veins 3 and 5 in the type specimen.

4 ♂♂, 2 ♀♀ obtained.

22. *Mynes geoffroyi aureodiscus*, subsp. nov.

(Plate XXVII, fig. 3, ♂.)

Allied to *semperi*, Stgr. ♂ differs above in having an ill-defined apical streak, some dark scaling at base of wing, and some greyish scaling at terminal margin of white area. On hindwing the black margin is broader and occupies half the costa. The light central patch is square-shaped and much reduced distally and costally, being limited by vein 7 and separated from a light stripe at inner margin of the greyish discal colour.

*Underside* of forewing similar to *semperi*; costal spot directed basally, yellow apical spots larger, and extended black in cellule 4. Hindwing with reduced discal patch as above, limited anteriorly by vein 7 and posteriorly by first submedian, being separated by some yellow scaling from inner marginal yellow border. The distal edge of the patch is nebulous and there is some yellow scaling in the space between it and an outer yellowish discal line which represents the limit of the discal patch in *semperi*.

♀. *Upperside* black with basal half suffused with yellow scaling. Forewing with a yellow patch at base of cell, and a creamy apical band. Hindwing with basal half of cell yellow, base of costa and inner margin whitish. A narrow creamy marginal band.

*Underside* of forewing yellowish in and around cell. Black area enlarged posteriorly, reaching below 3 and thence narrowing to outer angle. Costal spot divided and apical spots forming a band. Hindwing with yellow discal area much enlarged, reaching subcostal, extended to the base, and merged in the inner marginal area which is extended posteriorly. Red costal streak more extended.

A series of both sexes.

In the ♂ the yellow discal patch on hindwing below varies from a breadth of 4·5 mm. to 9·5 mm. Two ♀♀ have a creamy scaling over disc of forewing.

A small series of the dark form *doryca*, Butl., was received. There are no intermediates.

### 23. *Hypolimnias pithoea fumosus*, subsp. nov.

♂. *Upperside* of forewing a deep smoky-brown which is darker than in *pithoea*; paler at apex and along outer margin where the marginal line is distinct. Hindwing with dark basal area same colour as forewing, distal area much paler.

*Underside* markings as in *pithoea*. Ground-colour pale olivaceous-brown except the darker posterior area of the forewing. Marginal line much thinner and closer to margin.

♀. *Upperside* paler than ♂, discal area and band of forewing coloured as in *pithoea* and with some reddish-brown scaling. Hindwing light olivaceous-brown, a white discal dot in 6.

*Underside* as in ♂ but a little paler. White fringe dots between veins on hindwing.

A series.

### 24. *Doleschallia bisaltide nigromarginata*, subsp. nov.

This form is allied to *nasica*, Fruh., from Waigeu.

♂. The wings are widely margined with black. The discal area of forewing extends to vein 4, filling base of cellule 3. The costal patch varies in size and in one specimen is reduced to two small spots; the space between it and the cell is in another specimen almost filled in with brown. Another specimen is much nearer *nasica* in the narrower black margins, and hindwing with only costa and apex black. The outer margin of forewing is more concave, and of hindwing more straight than in other specimens.

♀. Similar to ♂. Discal area of forewing more extended, costal patch larger.

6 ♂♂, 1 ♀ obtained.

### 25. *Doleschallia noorna fulva*, subsp. nov.

♂. *Upperside* of forewing with apical and outer margin narrower than in typical form. The lower three apical spots are obsolete, and the discocellular spot enlarged. On the hindwing the dark apical margin only reaches vein 4; discal spots obsolete; submarginal and marginal lines much less heavily marked.

*Underside* with more uniform ground-colour and reduced white markings.

♀. *Upperside* paler than in *noorna*; outer marginal border of forewing narrower, being about 3 mm. broad. Discocellular spot evanescent posteriorly. Hindwing without any dark suffusion along outer margin except a faint scaling at apex.

*Underside* marked as in *noorna* but paler.

A series obtained.

Specimens in collection of Joicey from Mefor agree with the above form.

## 26. *Acca venilia albopunctata*, subsp. nov.

Nearest *pseudovenilia*, Fruh., from Dutch N. Guinea.

♂. *Upperside* of forewing with blue median area reduced, the two upper spots being narrowly margined. The edges of median spots are straight instead of rounded. Submarginal dots smaller than in *venilia*. Band on hindwing narrowly margined with blue. *Underside* of hindwing with band not edged with grey distally, and marginal spots absent.

♀. *Upperside* with dead white markings without any trace of blue, the place of this colour being taken by a slight grey scaling. On forewing the median spots are larger, and on hindwing the band is broader with a straighter distal edge.

*Underside* with white markings and similar to ♂.

3 ♂♂, 6 ♀♀ obtained.

## 27. *Neptis shepherdii gregalis*, subsp. nov.

(Plate XXVI, fig. 5, ♂.)

Allied to the form *damia*, Fruh., from N. Guinea, late German Territory.

♂. *Upperside* with all spots on the forewing larger than in *damia*. On the hindwing the discal band narrows posteriorly and all the spots are separated by the black veins. A postdiscal row of 6 white spots and parallel to them a submarginal row of faint white dots.

*Underside* with darker ground-colour than in *damia*, spots as above. Hindwing with a pale subcostal streak; a small spot in 6 forming anterior end of discal band; a pale but distinct discal line; postdiscal spots larger than above; a well-marked submarginal line and a thin marginal one.



♀ similar to the ♂. A narrow discal band on hindwing composed of more widely-separated spots above.

A series. June 1914.

28. *Euthalia aeropus angustifascia*, subsp. nov.

(Plate XXVII, figs. 4, ♂; Plate XXVIII, fig. 1, ♀.)

Near *eutychius*, Fruh., from N. Guinea. ♂. *Upperside* with bands narrower than in *eutychius*. On the forewing the lower median and inner marginal spots are broadened. Outside cell at its upper end a single dot instead of two as in N. G. form. On hindwing the band does not narrow posteriorly but is of a uniform breadth of 3.5 mm., and is straight on both edges. A curved mark joining the band posteriorly on outer edge, encloses a semicircular spot. *Underside* as in *eutychius*. Forewing with increased black area reaching vein 3. The cell-spot not so well defined, and median spots smaller.

♀. Bands much narrower than in other forms. *Upperside* with pale yellowish-brown bands. No spot in cell but a faint dot at upper end in angle of 5. Spots of the band more widely separate than in allied forms, and the three subapical ones are tinged with white, the two apical also white. Band on hindwing of a uniform breadth, about 5 mm. broad.

*Underside* of forewing with the band white. A trace of a discal spot in 2, a small one in 3. Eye-spot in cell less well-defined than in *eutychius* form. Hindwing not paler basally, band as above.

A series obtained.

29. *Prothoe australis satgeii*, subsp. nov.

(Plate XXVIII, fig. 2, ♂.)

♂. *Upperside* of forewing as in *australis*, Guér. Hindwing with discal patch rounded and only reaching anteriorly to middle of cellule 6. This patch consists of a creamy-white part placed distally, rounded outwardly, and proximally indented on veins 4 and 5. This is surrounded by greenish-grey which broadens proximally and adjoins a darker bluish area which forms the inner edge of the discal patch and is merged in the basal scaling.

*Underside* darker than in *australis*. Forewing with a submarginal row of 7 white dots, a white dot outside end of cell in interspace 4, and a similar curved dot within the cell at its end. Hindwing with reduced white discal patch consisting of 3 spots: the first nearly square in cellule 5, the second adjoining it in 4 is

larger and oblong, with straight edges, and fills breadth of cellule, the third in 3 is smaller than the first and rounded. A white dot in cell near base, a curved white mark near end of cell, a narrow white spot outside end of cell in 4, and a white dot above it in 5. Inner marginal streaks as in *australis* but much fainter, darker, and interrupted. The yellow tail spot is round, and there is a smaller marginal lunate spot in 2 which is greenish and tinged with yellow proximally. The margin outwardly of the discal patch and extending inwardly to the base of inner margin is much darker than rest of wing.

♀ similar to ♂ but larger. *Underside* of forewing with the submarginal spots fainter and the two lower ones absent. The third and smaller spot of the white hindwing patch is still further reduced.

Length of forewing : ♂ 40 mm., ♀ 48 mm.

A series.

### 30. *Charaxes latona marcia*, subsp. nov.

(Plate XXVIII, fig. 3, ♀.)

This rather distinct form is nearest *diana*, Roths., from N. Hanover.

♂. Resembles *diana*, Roths. *Upperside*: forewing with the black area extending to apex of cell and to a third of inner margin. The basal brown extends as a small spot beyond cell at lower angle, and along two-thirds of costa. Hindwing with the marginal black extending to near the middle and narrowing posteriorly from costa to middle of cellule 3, its inner edge being very slightly convex. Veins 6 and 7 are black nearly to their bases. Two submarginal brown spots in 6 and 7, followed by obscure dark-brown lunules in 5, 4, and 3, the last cutting off a round black spot, a similar spot in 2. Margin brown to vein 5.

*Underside* of a bronzy-green tint, markings as in ♀. The outer lunulate line on forewing bordered distally by blurred dark rufous spots, forming a band which becomes obsolete anteriorly. The median black bars edged with pinkish-white distally and broadly so in the lower median space, the white area merging into the similarly coloured inner margin. The basal median area has a pinkish tint. Hindwing: the discal black bars extend to cellule 2. The outer lunulate band is filled in with rufous-brown.

Length of forewing : 41 mm.

♀. Smaller than *diana* ♀ and the white band not divided as in that species. The outer row of lunate spots which form the distal half of the band in *diana*, are here reduced to vestiges; the white costal spot

of the band is broader. The base of both wings is paler than in *diana*. On hindwing the white costal spot is narrower and prolonged to form a discal band which is obsolete below vein 3, the space between this band and the submarginal spots being as dark as base of wing.

On *underside* the light band is wider on forewing and straighter on hindwing than in the allied form. On forewing the post-discal lunulate line is bordered distally by a row of dark blurred spots which in *diana* are placed nearer the margin and are paler. On hindwing the white band fills the space between the two discal lines, and the yellowish margin of outer line is much narrower than in *diana*.

Length of forewing : 46 mm.

1 ♂, 3 ♀♀ obtained.

#### AMATHUSIIDAE.

##### *Taenaris scylla*, Stgr. ♀.

*Tenaris scylla*, Stgr. (u. Schatz), Exot. Schmett., vol. i, p. 193, 200 (1887).

*Tenaris dohertyi*, Sm., Novit. Zool., vol. i, p. 358 (1894).

♀. Larger and more rounded wings. Forewing with apex broadly smoky-brown and costa narrowly so; rest of wing pure white. The dark basal area below shows through above on both wings. Hindwing as in ♂ but with a broader marginal border from base of costa to anal angle.

*Underside* similar to ♂. The white patch on forewing broader and reaching vein 10. On the hindwing the white band is broader between the eye-spots.

A series of both sexes was obtained.

#### SATYRIDAE.

##### 31. *Elymnias cybele umbratilis*, subsp. nov.

♂. Allied to the form *holofernes*, Butl., but larger and darker, being sooty-brown above. *Underside* of forewing with 4 submarginal spots in 2-5, the one in 4 placed a little proximal of the spot above and below, the spot in 2 smaller and nearer the margin. Hindwing with the submarginal spots placed more proximal than in *holofernes*, and larger and more bluish.

Length of forewing : 42 mm.

5 ♂♂ obtained.

32. *Elymnias viridescens cinereomargo*, subsp. nov.

(Plate XXV, fig. 5, ♂.)

♂. Outer margin of both wings straighter than in the type form. *Upperside* of forewing with margins more bluish and darker than in *viridescens*, Sm. Hindwing with a much narrower band. *Underside* of a uniform dark olivaceous-brown. Forewing with no light apical suffusion. Hindwing with no light distal border but a margin of short white and intermixed striae.

♀. Larger than the ♂ and coffee-brown in colour. *Upperside* of forewing with the costa and a submarginal area paler than the ground-colour. Hindwing with basal area including cell of same ground-colour as forewing, distal area much paler.

*Underside* pale coffee-brown with broader marginal striation. Forewing with a small blue spot near the margin in cellule 4 and one above it in 5.

Length of forewing : 33 mm.

6 ♂♂, 1 ♀ obtained.

The ♀ is apparently mimetic. It bears on both sides a resemblance to the *Hypolimnias pithoea*, and to the ♀ of *Euploea cerberus*, Butl., on the upperside.

A single specimen received which we hope to figure in a succeeding paper.

33. *Melanitis amabilis angulata*, subsp. nov.

♀. The white band does not reach below the submedian, is sharply angled just before, and ends in a point along the vein. Below, the angle is less pronounced.

Three specimens.

## ERYCINIDAE.

34. *Dicallaneura princessa*, Sm., ♂.

(Plate XXVI, fig. 6.)

Nov. Zool., vol. i, p. 544, ♀.

*Upperside* similar to ♂ of *pulchra*, Guér., the band being a little shorter and wider than in that species. The ground-colour is darker and more strongly shot with blue. *Underside* as in the ♀. A smaller dark discal patch on the forewing, the 3 spots within it being slightly larger.

Length of forewing : 21 mm.

A series of both sexes was obtained.

